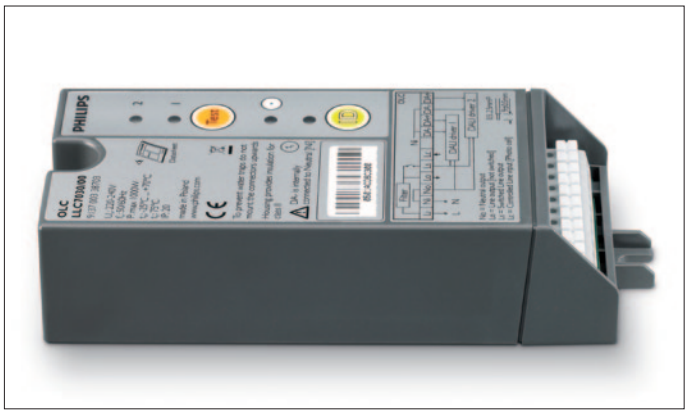
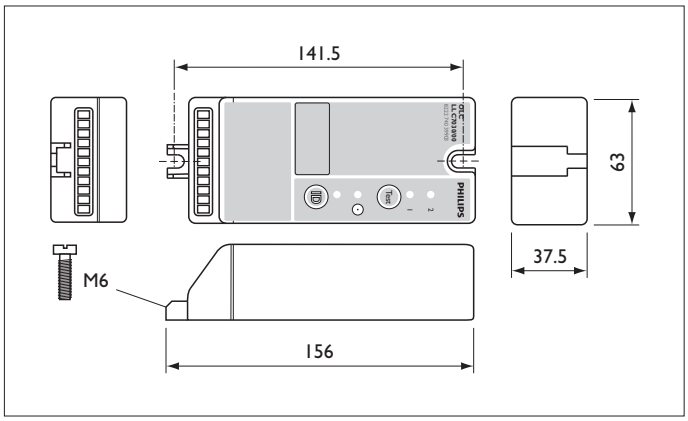
LLC7030 Datasheet
Outdoor Luminaire Controller DALI





Dimensions in mm

General Description

The Outdoor Luminaire Controller (OLC) is a high-performance LonWorks® network device that connects to a lamp-driver combination to control and monitor.

Communication with the OLC is established via the power line utilizing the LonTalk® open protocol. It interacts with the lamp driver by means of a DALI interface and when needed, switching its output. Because of the DALI interface it is possible to control more lamps with less OLC's, compared to the 1 – 10V OLC.

The OLC makes use of the DALI commands and therefore extra data from the driver will be available in the Starsense system.
The OLC can autonomously switch its output ON and OFF if combined with a photocell.

The OLC is designed to work in combination with the Philips Segment Controller (SC) in a Philips Starsense outdoor lighting telemanagement system.

Applications

Each LLC7030 is able to monitor and control up to two independent lamp-driver combinations.

It is designed for use in highway, residential, street and road lighting applications including parking lots, ports, train stations and industrial complexes.

The design of the OLC is optimized for mounting within a luminaire.

It is recommended for optimal performance to connect not more than 70 OLC's to one SC if the two DALI outputs are used (so 140 drivers) or 140 OLC's if only one DALI output is used.

The Philips OLC is released and authorized to solely interact with the Philips SC, consult the local Philips representative if desired otherwise.

When you switch the lamp-driver on/off by a DALI command, there is the possibility to use the Switched Line Output for another type of load, like an advert light or Christmas lights.

The LLC7030 OLC DALI doesn't measure energy consumption; this information is gathered from the driver. For advanced metering you may use the LLC7035 OLC DALI that integrates a meter chip with high accuracy energy metering.

Tip
The Philips Starsense system uses the Philips Starsense Configurator and Supervisor software. The license to use this software is embedded in the Segment Controller.

PHILIPS

General operation

The OLC combines three main functions:
1 The controller function receives the incoming commands from the SC and acts accordingly.
2 The OLC switches the Line Output and communicates with the lamp-driver via the DALI interfaces.
3 The monitor function reports data on current, mains voltage, mains frequency, power factor, burning hours and power consumption of the connected lamp-driver combination. This information is used to determine condition of the lamp-driver combination.

A default configured OLC will switch ON its output at maximum level on power-up.

A backup scenario (safeguard mechanism) is available and can be configured in different ways. Refer to page 4 of this document and the Starsense Configurator Manual for more information on this topic.

Repeating

The OLC is equipped with a power line transceiver, which can repeat messages. The SC monitors and controls the dynamic repeating functionality centrally. If communication fails between the SC and a specific OLC, another OLC can be designated dynamically by the SC, which can repeat messages. The SC will autonomously and continuously keep track of which OLC's can be reached directly and which ones require message repeating.

Mounting information

The OLC is designed to be installed inside a luminaire, but can also be mounted in the pole, gear-trays and separate boxes. If the OLC is mounted inside a pole it may only be mounted upright. The OLC may be mounted in any position if the enclosure is IP43 or above.
Please also refer to the installation instruction of the LLC7030.

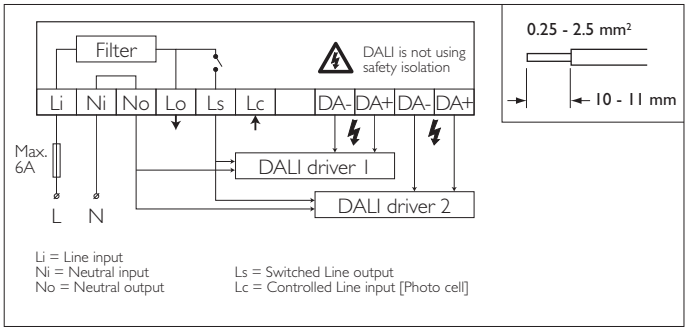
Released drivers

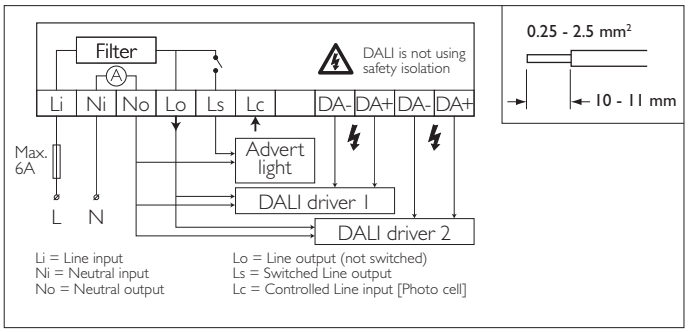
Currently the lamp-drivers released to interact with the DALI outputs of the OLC are:
- PHILIPS HID-DV DALI 100/150W SON/CDM with lamps SON and CDM-TT
- PHILIPS HID-DV DALI Xtreme driver with CPO (Cosmopolis) lamps 60, 90, 140 W
- PHILIPS HF-Regulator II Touch and DALI for PL-L, PL-T, PL-C lamps

Any other component must be validated before it may be used with the OLC. Contact your local Philips representative about how to obtain component validation.

Warning
The DALI interface is not using safety isolation
(DA- is internally connected to the Neutral conductor).
Disconnect the main power supply before servicing.

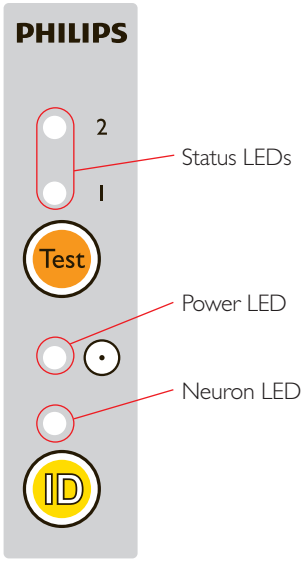
Wiring Diagram





User interface

The LLC7030 has two pushbuttons. One is for testing the lamp-driver combination and one to send its unique Neuron® ID number to the Segment Controller (see Starsense System User Manual for more information). The test button can also be used as maintenance indicator.



Status LEDs	LED 1 and 2 will show which output is switched ON.
Power LED	Will show device- or output status, if it's continuously in blinking mode the OLC is in error mode, consult your local Philips representative.
Neuron LED	Will show when Neuron® ID is send. The yellow service LED indicates the internal OLC state:
	ON: Application-less. The OLC has only communication parameters loaded.
	Blinking: Unconfigured. This OLC state indicates that it has communication parameters and an application program and network address information. This OLC state is the "idle" state. Commissioning and configuration need to be performed.
	OFF: Configured.

From the factory the OLC is configured for a default lamp and is operating normally.

Test button

- Pressing the test button while the output is OFF will switch the output ON for 15 minutes at maximum. The output will be turned OFF after the timer has expired. During this period the red LED 1 blinks slowly.
- Pressing the test button while the output is at maximum level will cause the output to switch for 15 minutes at dimmed level. The output will be turned OFF after the timer has expired. During this period the red LED 1 blinks rapidly.
- Pressing the test button while the output is ON at a dimmed level will switch the output OFF.

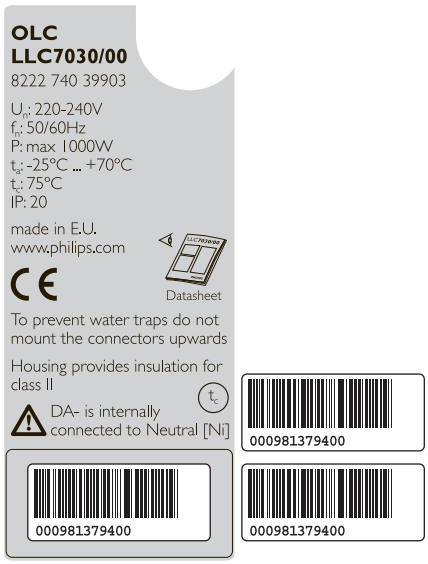
Attention
The OLCs output will be switched OFF after 15 minutes. Power cycle the OLC to have the output automatically switched to its configured power-up level.

Maintenance identification

After maintenance has been done on an OLC, press the test button for 4 seconds, an identification message will be send via powerline and will be made visible in the supervisor software.

Neuron® ID

Each OLC has a unique fixed 48-bit identifier called Neuron® ID. The Neuron® ID is printed on the three barcode labels placed on the front of the OLC, which barcode readers can read.



OLC label

Attention
When the OLC is installed it is vital for the Starsense system operation that it knows the Neuron® ID and the location of the device. A drawing or list indicating which Neuron® ID belongs to which installed OLC acts as an input for creating the Starsense telemanagement configuration off-line.

Tip
See Starsense System User Manual for usage suggestions.

Powering the OLC ON

Apply mains power to the OLC once it is mounted securely and all its wiring is connected as shown in the typical wiring diagram. After power-up, both red LEDs will come ON for 3 seconds. The unit is fully operational and ready for commissioning and configuration after both red LEDs go OFF. The green power LED should stay ON continuously indicating that power is applied and the OLC is running in a correct mode. The OLC is now in its default configuration. The safe-guard mechanisms, burning hours counter, power-up behavior and manual interfaces are operational.

Status messages

The OLC continuously monitors the current internal temperature. Each newly generated status message is time-stamped. Only the last two status messages are available via power line messages. Energy consumption and burning hours are stored in non-volatile OLC memory and can be obtained, together with status messages, by the SC and Starsense Supervisor software.

Safe-guard mechanism with photocell

The OLC can (configuration property) fall back onto photocell operation when it detects a communication failure with the SC. This safe-guard mechanism prevents light points from staying OFF during the night, causing dangerous situations, and from staying ON during the day, which would waste energy. The OLC is equipped with one single-pole 230VAC input to monitor the photocell operation. When in safe-guard mode, the OLC will follow the photocell input with its output. A factory default OLC will switch to the safe-guard state if a 230VAC voltage level is detected on the photocell input.

Note: It is only possible to connect photocells which use an electromagnetic relay.

"Door open" detection

The photocell input can also be used as a "door open" detector. Refer to the Starsense System User Manual on how to configure and use this feature.

Safe-guard mechanism with back-up scheduler

When no photocell is being used the back-up scheduler can be used. The OLC can (configuration property) fall back to run according to a pre-configured schedule when it detects a communication failure with the SC. The OLC will use this back-up schedule to switch its output. It runs on its own internal real-time clock if it is in this stand-alone mode. The switch ON level can be pre-configured through the OLC power-up value.

Daylight control based on photocell operation

When in daylight control mode (configuration property), the OLC will follow the photocell input with its output while still receiving and executing the dimming levels from the segment controller. In this way the switching points are controlled by the available sunlight and the light level is controlled by the Starsense system. Lamp-ballast monitoring is enabled within daylight control. The following functional table is foreseen for photocell use.

Photocell detection	Photocell relay	Photocell Line out
Dusk	Closed	Mains voltage
Dawn	Open	Nothing

Technical data

Operating conditions

Temperature	-25°C to +70°C
Relative humidity	10% to 90%
Max. housing temperature	+75°C (on Tc spot, see OLC cover)

If the Tc rises beyond 85°C during use, the OLC will switch off the relay (load).

Non-operating conditions

Temperature	-40°C to +85°C
Relative humidity	5% to 90%

Mains connection

Mains voltage	220-240V ± 10%
Mains frequency	50/60 Hz ± 5%
Max. load wattage	1000W (2 x 400W) DALI drivers including advert light

Power consumption

Stand-by wattage	<2W

Connector block

Mains connector	WAGO 804 series contact cage clamp connection
Wire cross section [mm^2]	0.25 - 2.5 mm^2 solid 0.25 - 2.5 mm^2 fine stranded 0.25 - 1.5 mm^2 fine stranded with ferrule and plastic collar 0.25 - 2.5 mm^2 fine stranded with ferrule, without plastic collar
Wire cross section [AWG]	20-12 AWG solid
Wire strip length	10-11 mm

Power line interface

Channel type	PL-20C power line
Coupling	Line-to-Neutral, Non-Isolated Coupling
Protocol	ANSI/EIA 709.1
Power line transceivers	Compliant to ANSI/EIA 709.2
Frequency band	CENELEC consumer band: C-band (132.5kHz), automated B-band (110kHz) selection if communication on C-band fails
Approval	FCC and CENELEC EN50065-1 compliant. RoHS directive 2002/95/EC REACH SVHC
Filter	Internal band stop filter, to filter interference from the lamp driver.

DALI interface

Interface	Compliant to IEC 60929:2004 Annex E
Number if interfaces	2 individual digital control outputs
Max. load	8mA per output

Photocell input

Input	Suitable for magnetic relay type photocell (without snubber)

Indicators

Power LED (green)	This LED is on when the OLC has power.
Service LED (yellow)	This LED is normally off. Blinking indicates that the application is in un-configured state.
Output LED (red 2x)	2 red LEDs labelled 1 and 2, which indicate the output state of DALI output 1 and 2.

Manual controls

Service button (yellow):	Send Neuron® ID
Test button (orange):	Change output states 1 and 2 (100%-50%-OFF)
Barcode code	Code128 (Neuron ID)
Back-up scheduler	Accuracy ± 0.7%
Safety pre-fuse requirement	Max. value pre-fuse: 6 ATH

Housing

Material	Bayblend® KU 2-1514 (PC+ABS Blend)
Flammability	UL 94V-0 at 1.5mm thickness
Glow wire test	850°C
Protection class	IP20 in any position IP22 in upright position
Dimensions	H: 15.6 cm, W: 6.3 cm, D: 6.3 cm
Weight	0.31 kg

Standards

Safety	EN61347-2-11
Immunity	EN61547; EN50065-2-1
Emission	CISPR15 edition 7.1

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Packing data

Type	Box dimensions (mm)	Qty	Material	Weight (Kg) net	gross
LLC7030 OLC DALI	295 x 385 x 165	24	cardboard	4.99	5.08

Ordering Data

Type	MOQ	Ordering number	EAN code level 1	EAN code level 3	EOC
LLC7030 OLC DALI	1	9137 003 38703	87115 59732817	87115 59732831	732817 99

322 636 36123
03/2011
Data subject to change

www.philips.com/lightingcontrols

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